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SHORT REPORT

Gender-Related Health Care Discrimination and Human Papillomavirus Vaccination Among Transgender and Nonbinary Young Adults in the United States

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Abstract

Although transgender and nonbinary (TNB) people can acquire human papillomavirus (HPV), research examining HPV vaccination in these populations is scarce. TNB individuals experience high levels of gender-related health care discrimination, which may undermine HPV vaccine uptake. Using data from a national online survey ($N = 716$), we found a negative association between gender-related health care discrimination and HPV vaccination among transgender women and nonbinary individuals who were assigned male at birth (AMAB; odds ratio [OR] = 0.52; 95% confidence interval [CI]: 0.29–0.93). Addressing gender-related health care discrimination may facilitate HPV vaccination and help prevent HPV-related cancers among transgender women and nonbinary AMAB individuals.

Keywords: discrimination; gender identity; papillomavirus; transgender health; vaccination; young adults

Introduction

Research on human papillomavirus (HPV) vaccination among transgender and nonbinary (TNB) people—including transgender women, transgender men, and individuals with a gender identity that is either a combination of or neither woman nor man (i.e., nonbinary)—is scarce. However, TNB people can acquire HPV from a wide range of sexual behaviors (e.g., oral, anal, or vaginal sex with body parts or sex toys) with sexual partners with various gender identities and sexual orientations.[1–3]

Further, studies indicate that transgender women and nonbinary assigned male at birth (AMAB) individuals are at especially high risk of HIV as a result of elevated levels of social and economic marginalization, violence, trauma, depression, and substance use, all of which are linked to interpersonal and structural transphobia.[4–7] Thus, given the association between HIV and HPV infection, transgender women and nonbinary AMAB people may be at particularly high risk of acquiring HPV and developing HPV-related cancers, including anal, oropharyngeal, and penile cancer.[1,2,8]

TNB people face notable barriers to accessing health care in general and HPV-related care, including HPV vaccination, in particular.[1,3,9] Barriers include limited access to health insurance and a usual source of care,

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among TNB individuals and limited provider knowledge of and competence in transgender health, including sexual health. Moreover, the lack of inclusion of TNB people in sexuality and HPV education materials and programs and HPV vaccination guidelines may lead to erroneous assumptions among providers, patients, and parents that HPV vaccines are not relevant to these populations. Further, and the initial marketing of the HPV vaccine to (presumably cisgender) women and girls for the prevention of cervical cancer may have led to inaccurate beliefs that HPV vaccination is not needed among TNB individuals.[1,3,9,10]

Further, TNB people experience pervasive gender-related stigma and discrimination from providers and staff in health care settings.[1,3,9,11,12] For example, data from the 2015 U.S. Transgender Survey show that, among participants who reported seeing a health care provider in the past year, one-third (33%) had experienced discriminatory treatment in a health care setting in relation to their gender identity or expression, including being denied care, being verbally harassed, being physically or sexually assaulted, or having to educate their provider about transgender people to receive adequate care.[11] In addition, institutional practices, systems, and norms in health care organizations tend to exclude and marginalize TNB people.[11]

Gender-related stigma and discrimination in health care settings—at both the provider and institutional levels—may undermine receipt of health services such as HPV vaccines among TNB people by leading to avoidance of or delayed care, a lack of health care provider recommendation of needed services, and mistrust of health care providers' recommendations.[1,3,9,13] Thus, we designed a quantitative study to examine the association between gender-related health care discrimination and HPV vaccination initiation among TNB young adults in the United States (U.S.).

Materials and Methods

Study population

We conducted a national cross-sectional online survey among transgender women and men and nonbinary AFAB and AMAB U.S. young adults between February and July 2019 ($N=716$). Individuals were eligible to complete the survey if they were aged 18–30 years, lived in the United States, and reported a gender identity (e.g., woman, man, nonbinary) that does not match cultural expectations for the sex they were assigned at birth (i.e., female, male).

Participant recruitment

Study participants were recruited using a variety of strategies—including through community-based organizations, listservs, newsletters, college student organizations, and social media groups serving TNB young people, lesbian, gay, bisexual, transgender, and queer health centers, and paid targeted social media advertisements. Recruitment materials contained a link to an online screening form that interested participants could complete to assess their eligibility. Eligible individuals received a link to an online informed consent form, and participants who consented to participate in the study were given access to the anonymous online survey. All research activities were reviewed and approved by the Boston Children's Hospital Institutional Review Board.

Data collection

The survey was administered online using REDCap. All completed surveys were validated using a 3-stage protocol involving a combination of automated and manual screening procedures aimed at ensuring that respondents were not fraudulent (i.e., ineligible participants or preprogrammed bots) and/or did not complete the survey multiple times. A total of 4,604 individuals completed the online screening form and 1,677 completed the online survey. Of these, 716 (43%) passed all validation procedures and were included in the final sample. Upon completion of the survey, participants could choose to either receive a US $10 gift card, or donate their incentive to one of two community-based transgender health and rights organizations.

Measures

The dichotomous outcome was HPV vaccination initiation (≥ 1 dose; yes/no), which was assessed using the following question: "How many doses of the HPV vaccine have you received?"

The primary predictor was ever experiencing gender-related discrimination when obtaining health care (yes/no), which was assessed using the following item from the gender-related discrimination subscale of the Gender Minority Stress and Resilience Scale[14]: "I have had difficulty getting health care or mental health treatment (transition-related or other) because of my gender identity or expression." Response options included never, before age 18 years, after age 18 years, and in the past year. Per the scale developers' recommendation, this item was coded dichotomously as

never or ever (i.e., all other responses).[14] There were no missing data for HPV vaccination initiation or gender-related health care discrimination.

Demographic factors, which are shown with their categorization in Table 1 and were selected *a priori* based on the scientific literature and conceptualized as potential confounders, included age, gender identity, race/ethnicity, geographic region, and sexual orientation identity. The proportion of missing data for potential confounders was small. Specifically, of these variables, only geographic region had missingness at 0.1% ($n=1$) in the total sample, 0.2% ($n=1$) among AFAB participants, and 0.0% ($n=0$) among AMAB participants.

Statistical analysis

We first ascertained the distribution of all HPV vaccination initiation, gender-related health care discrimination, and demographic factors among TNB U.S. young adults aged 18–30 years ($N=716$), overall and stratified by sex assigned at birth. We then ascertained the bivariate association between ever experiencing gender-related health care discrimination and HPV vaccination initiation using the chi-square test in the total sample and among transgender men and non-binary AFAB people ($n=412$) and transgender women and non-binary AMAB people ($n=304$) separately.

Further, we used multivariable logistic regression to estimate odds ratios (ORs) and 95% confidence

Table 1. Percent Distribution of Demographic, Socioeconomic, and Health Care Factors Among Transgender Men and Nonbinary Assigned Female at Birth People and Transgender Women Assigned Male at Birth People Aged 18–30 Years ($N=716$)

Characteristic (%)	Total ($N=716$)	Transgender men and nonbinary[a] AFAB people ($n=412$)	Transgender women and nonbinary[a] AMAB people ($n=304$)
Age (years)			
18–24	59.5	62.1	55.9
25–30	40.5	37.9	44.1
Gender identity			
Transgender woman or man	57.4	35.7	86.8
Nonbinary[a]	42.6	64.3	13.2
Race/ethnicity			
Asian	6.8	9.0	3.9
Black	13.7	13.8	13.5
Latinx or Hispanic	9.8	11.2	7.9
White	43.7	33.0	58.2
Multiracial or another race/ethnicity	26.0	33.0	16.4
Geographic region			
Midwest	15.1	14.3	16.1
Northeast	33.9	38.6	27.6
South	26.4	25.2	28.0
West	24.4	21.6	28.3
Missing	0.1	0.2	0.0
Sexual orientation identity			
Heterosexual	9.6	5.8	14.8
Bisexual, pansexual, or queer	60.8	69.4	49.0
Lesbian or gay	18.4	12.4	26.6
Another sexual orientation identity	11.2	12.4	9.5
Educational attainment			
Less than college	20.0	12.1	30.6
Some college or more	80.0	87.9	69.4
Employment status			
Employed	54.5	49.0	61.8
Student	36.7	43.2	28.0
Unemployed	8.8	7.8	10.2
Health Insurance			
Public	27.7	26.7	28.9
Private	53.9	59.5	46.4
None	12.3	6.1	20.7
Missing	6.1	7.8	3.9
Ever experienced gender-related health care discrimination: yes	52.1	48.1	57.6

Percentages may not add to 100 due to rounding.
[a]Includes nonbinary, genderqueer, gender nonconforming, agender, or another gender identity.
AFAB, assigned female at birth; AMAB, assigned male at birth.

intervals (CIs) for HPV vaccination initiation in relation to lifetime gender-related health care discrimination, adjusting for age, gender identity, race/ethnicity, geographic region, and sexual orientation identity, overall and by sex assigned at birth. All analyses were conducted using R Version 4.0.2.

Results

Table 1 shows that the majority of survey participants were aged 18–24 years—both in the total sample and among transgender men and non-binary AFAB people and transgender women and non-binary AMAB people. Further, the majority (64.3%) of transgender men and nonbinary AFAB people reported a gender identity outside of the gender binary (i.e., nonbinary, including nonbinary, genderqueer, gender nonconforming, agender, or another gender identity); the majority (86.8%) of transgender women and nonbinary AMAB people identified as a woman or transgender woman. In the total sample, most (43.7%) participants identified as white, including the majority (58.2%) of transgender women and nonbinary AMAB individuals and about a third (33.0%) of transgender men and nonbinary AFAB individuals (Table 1).

The overall sample was composed of 6.8% Asian, 13.7% Black, 9.8% Latinx or Hispanic, and 26% multiracial individuals (23.6%) and people from another racial/ethnic background (2.4%)—with a greater proportion of racially/ethnically minoritized people among transgender men and non-binary AFAB people (67.0%) compared with transgender women and non-binary AMAB individuals (41.8%). In addition, approximately one-third of participants resided in the Northeast, and about a quarter in the South and West. Most participants identified as bisexual, pansexual, or queer in the total sample (60.8%) and among transgender men and non-binary AFAB people (69.4%) and transgender women and non-binary AMAB individuals (49.0%). About half (52.1%) of participants, including the majority of transgender women and nonbinary AMAB individuals (57.6%), had ever experienced gender-related health care discrimination (Table 1).

Table 2 shows that almost half (49.5%) of participants had received at least one dose of the HPV vaccine, including the majority (66.5%) of transgender men and nonbinary AFAB individuals and about a quarter (26.3%) of transgender women and nonbinary AMAB people. Moreover, in the total sample, participants who had ever experienced gender-related health care discrimination were significantly less likely than those who had not to have initiated HPV vaccination (23.6% vs. 25.8%, $p = 0.026$).

Stratifying by sex assigned at birth, we found a statistically significant negative association between gender-related health care discrimination and HPV vaccination initiation among transgender women and nonbinary AMAB individuals (11.8% vs. 14.5%; $p = 0.012$) but not transgender men and nonbinary AFAB people (32.3% vs. 34.2%; $p = 0.864$) (Table 2).

Adjusting for demographic factors (i.e., age, gender identity, race/ethnicity, geographic region, and sexual orientation identity), we found no statistically significant association between gender-related health care discrimination and HPV vaccination initiation among participants overall (OR = 0.89; 95% CI: 0.64–1.23), or among transgender men and nonbinary AFAB individuals in particular (OR = 1.28; 95% CI: 0.83–1.97; Table 3). However, among transgender women and nonbinary AMAB participants, we observed that those who had experienced gender-related health care discrimination had significantly lower adjusted odds of having initiated HPV vaccination (OR = 0.52; 95% CI: 0.29–0.93); (Table 3).

Table 2. Distribution of Human Papillomavirus Vaccination Initiation Overall and by Having Ever Experienced Gender-Related Health Care Discrimination Among Transgender Men and Nonbinary Assigned Female at Birth People and Transgender Women and Assigned Male at Birth People Aged 18–30 Years ($N = 716$)

	Total ($N = 716$)			Transgender men and nonbinary[a] AFAB people ($n = 412$)			Transgender women and nonbinary[a] AMAB people ($n = 304$)		
Variable	*n*	% (95% CI)	*p*	*n*	% (95% CI)	*p*	*n*	% (95% CI)	*p*
Total	354	49.5 (47.6–51.3)		274	66.5 (64.2–68.8)		80	26.3 (23.8–28.8)	
Ever experienced gender-related health care discrimination									
Yes	169	23.6 (22.0–25.2)	**0.026**	133	32.3 (30.0–34.6)	0.864	36	11.8 (10.0–13.7)	**0.012**
No	185	25.8 (24.2–27.5)		141	34.2 (31.9–36.6)		44	14.5 (12.5–16.5)	

Bolded *p*-values represent statistically significant associations between ever experiencing gender-related health care discrimination and HPV vaccination initiation based on the chi-square test ($\alpha = 0.05$).

[a]Includes nonbinary, genderqueer, gender nonconforming, agender, or another gender identity.

CI, confidence intervals.

Table 3. Multivariable Logistic Regression Models for the Association Between Having Ever Experienced Gender-Related Health Care Discrimination and Human Papillomavirus Vaccination Initiation Among Transgender Men and Nonbinary Assigned Female at Birth People and Transgender Women and Assigned Male at Birth People Aged 18–30 Years ($N = 716$)

Variable	Total ($N = 716$) OR (95% CI)	Transgender men and nonbinary[a] AFAB people ($n = 412$) OR (95% CI)	Transgender women and nonbinary[a] AMAB people ($n = 304$) OR (95% CI)
Ever experienced gender-related health care discrimination			
No (reference)	1.00	1.00	1.00
Yes	0.89 (0.64–1.23)	1.28 (0.83–1.97)	**0.52 (0.29–0.93)**
Age (years)			
18–24 (reference)	1.00	1.00	1.00
25–30	0.75 (0.54–1.05)	0.88 (0.57–1.38)	0.46 (0.25–0.82)
Gender identity			
Transgender woman or man (reference)	1.00	1.00	1.00
Nonbinary[a]	**2.79 (1.96–3.99)**	**1.66 (1.03–2.65)**	1.46 (0.63–3.36)
Race/ethnicity			
White (reference)	1.00	1.00	1.00
Asian	1.12 (0.57–2.24)	1 (0.44–2.37)	0.72 (0.14–2.88)
Black	0.58 (0.35–0.97)	0.65 (0.33–1.32)	0.19 (0.05–0.55)
Latinx or Hispanic	0.71 (0.4–1.26)	0.71 (0.34–1.51)	0.29 (0.06–0.96)
Another race/ethnicity or multiracial	1.00 (0.66–1.51)	0.81 (0.47–1.42)	0.77 (0.34–1.68)
Geographic region			
Northeast (reference)	1.00	1.00	1.00
Midwest	0.86 (0.53–1.42)	1.02 (0.51–2.05)	0.79 (0.33–1.81)
South	0.68 (0.44–1.02)	0.77 (0.44–1.34)	0.59 (0.28–1.24)
West	0.72 (0.47–1.12)	0.79 (0.44–1.45)	0.72 (0.34–1.5)
Sexual orientation identity			
Heterosexual (reference)	1.00	1.00	1.00
Bisexual, pansexual, or queer	**3.38 (1.82–6.67)**	**2.54 (1.02–6.56)**	**5.23 (1.88–18.72)**
Lesbian or gay	2.00 (1.00–4.18)	2.31 (0.81–6.76)	2.51 (0.8–9.58)
Another sexual orientation identity	1.67 (0.78–3.73)	1.2 (0.42–3.53)	3.35 (0.83–15.11)

Bolded ORs have 95% CIs that do not include 1.
[a]Includes nonbinary, genderqueer, gender nonconforming, agender, or another gender identity.
OR, odds ratio.

Discussion

Using a national cross-sectional online survey, we found that approximately half of TNB U.S. young adults had received at least one dose of the HPV vaccine. However, while two-thirds of young adult transgender men and nonbinary AFAB people reported initiating HPV vaccination, only about a quarter of transgender women and nonbinary AMAB participants had ever received the vaccine. Further, we found that a high proportion of TNB young adults had experienced discrimination related to gender identity or expression when obtaining health care during their lifetime.

Of note, the majority of transgender women and nonbinary AMAB participants reported ever experiencing gender-related health care discrimination. Moreover, our findings indicate that, among transgender women and nonbinary AMAB young adults, there was a statistically significant negative association between ever experiencing gender-related health care discrimination and initiating HPV vaccination, adjusting for demographic factors. In contrast, we found no association between gender-related health care discrimination and HPV vaccination initiation among transgender men and nonbinary AFAB participants.

Our study results build on those of McRee et al., who found an overall HPV vaccination initiation prevalence of only 35% in a small ($n = 34$), predominately white (68%) national sample of transgender individuals aged 18–26 years,[15] by providing estimates of HPV vaccine uptake in a large, racially/ethnically diverse national sample of both TNB young adults, overall and stratified by sex assigned at birth. Moreover, our results complement those of Bednarczyk et al. who found that, in a national online sample of lesbian, gay, bisexual, and transgender young adults living in rural areas, transgender women and nonbinary AMAB participants had a considerably lower likelihood of initiating HPV vaccination compared with transgender men and nonbinary AFAB individuals.[10]

Of note, the prevalence of HPV vaccine uptake among young adult transgender women and nonbinary

AMAB people in our sample (26.3%) was lower than the prevalence among the young adult transgender men and nonbinary AFAB individuals in our study (66.5%) and the overall population of U.S. young adults (36.3%).[16] In contrast, HPV vaccination initiation among transgender women and nonbinary AMAB study participants was slightly higher than the prevalence among AMAB U.S. young adults overall (21.2%),[16] although considerably lower than the Health People 2030 target of 80% among adolescents aged 13–15 years.[17]

The relatively low prevalence of HPV vaccine uptake among young adult transgender women and nonbinary AMA individuals in our study may be due to a lack of health care provider recommendation in these populations,[10] which may be undermined by sex- and/or gender-related bias, stigma, or prejudice, among providers, both in general and vis-à-vis HPV vaccination in particular.[18] Moreover, transgender women and nonbinary AMAB young adults may be reluctant to follow health care providers' recommendation of HPV vaccination—or to seek health care in the first place—due to the pervasive experience or anticipation of gender-related discrimination.[11,13]

Finally, HPV vaccination was only recommended for AMAB youth starting in 2011, as opposed to 2006 among AFAB adolescents and young adults.[19] As such it is possible that, as is the case in predominately cisgender samples, in which HPV vaccine uptake is higher among AFAB compared with AMAB individuals,[16,20] HPV vaccine uptake lags among young adult transgender women and nonbinary AMAB people compared with their transgender men and non-binary AFAB peers.

Our findings should be interpreted in the context of several limitations. First, our results are based on a nonprobability, online sample. As such, our findings may not be generalizable to all TNB U.S. young adults. Second, OR 95% CIs were wide (Table 3), which indicates that additional research with larger sample sizes is needed to confirm our findings. Third, given the cross-sectional nature of our study, we are unable to establish temporality or infer causality from our results.

Finally, HPV vaccination initiation was self-reported by participants and not verified using medical records. Thus, it is possible that our prevalence estimates under or overestimate HPV vaccine uptake in this population. Nonetheless, our findings provide information on the association between gender-related health care discrimination and HPV vaccination among TNB individuals, a particularly under-researched population in the HPV vaccination literature.

Conclusion

In a large, racially/ethnically diverse national sample of TNB U.S. young adults, we found a low prevalence of HPV vaccination initiation among young adult transgender women and nonbinary AMAB people, which was associated with ever experiencing gender-related health care discrimination in this population. Thus, our findings suggest that initiatives that actively prevent and address gender-related discrimination in health care settings, at not only the provider but also the institutional level, and are inclusive of and relevant to diverse groups of TNB people are needed to facilitate HPV vaccination and, in turn, help prevent HPV-related cancers among transgender women and nonbinary AMAB people in the U.S.[9,13,18]

Authors' Contributions

M.A. conceptualized the study, interpreted the findings, and drafted and revised the article; E.L. conducted the data analyses, contributed to the interpretation of the findings, and substantively revised the article; G.R.M. and A.R.G. contributed to the acquisition and interpretation of the data, and critically revised the article for important intellectual content; and A.R.T. and N.D. contributed to the interpretation of the data and substantively revised the article. All authors provided final approval for publication of the article and agree to be accountable for all aspects of the work.

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Disclaimer

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References

1. Brown B, Poteat T, Marg L, Galea JT. Human papillomavirus-related cancer surveillance, prevention, and screening among transgender men and women: neglected populations at high risk. LGBT Health. 2017;4:315–319.
2. Singh V, Gratzer B, Gorbach PM, et al. Transgender women have higher human papillomavirus prevalence than men who have sex with men—two U.S. cities, 2012–2014. Sex Transm Dis. 2019;46:657–662.
3. Weyers S, Garland SM, Cruickshank M, et al. Cervical cancer prevention in transgender men: a review. BJOG. 2021;128:822–826.
4. Newcomb ME, Hill R, Buehler K, et al. High burden of mental health problems, substance use, violence, and related psychosocial factors in transgender, non-binary, and gender diverse youth and young adults. Arch Sex Behav. 2020;49:645–659.
5. Reisner SL, Murchison GR. A global research synthesis of HIV and STI biobehavioural risks in female-to-male transgender adults. Glob Public Health. 2016;11:866–887.
6. Oldenburg CE, Perez-Brumer AG, Reisner SL. Poverty matters: contextualizing the syndemic condition of psychological factors and newly diagnosed HIV infection in the United States. AIDS Lond Engl. 2014;28:2763–2769.
7. Perez-Brumer A, Nunn A, Hsiang E, et al. "We don't treat your kind": assessing HIV health needs holistically among transgender people in Jackson, Mississippi. PLoS One. 2018;13:e0202389.
8. LoSchiavo C, Greene RE, Halkitis PN. Human papillomavirus prevalence, genotype diversity, and risk factors among transgender women and nonbinary participants in the P18 Cohort Study. AIDS Patient Care STDs. 2020;34:502–505.
9. Apaydin KZ, Fontenot HB, Shtasel D, et al. Facilitators of and barriers to HPV vaccination among sexual and gender minority patients at a Boston community health center. Vaccine. 2018;36:3868–3875.
10. Bednarczyk RA, Whitehead JL, Stephenson R. Moving beyond sex: assessing the impact of gender identity on human papillomavirus vaccine recommendations and uptake among a national sample of rural-residing LGBT young adults. Papillomavirus Res. 2017;3:121–125.
11. James SE, Herman JL, Rankin S, et al. The Report of the 2015 U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality, 2016.
12. Poteat T, German D, Kerrigan D. Managing uncertainty: a grounded theory of stigma in transgender health care encounters. Soc Sci Med. 2013;84:22–29.
13. Kcomt L, Gorey KM, Barrett BJ, McCabe SE. Healthcare avoidance due to anticipated discrimination among transgender people: a call to create trans-affirmative environments. SSM - Popul Health. 2020;11:100608.
14. Testa RJ, Habarth J, Peta J, et al. Development of the gender minority stress and resilience measure. Psychol Sex Orientat Gend Divers. 2015;2:65–77.
15. McRee AL, Gower AL, Reiter PL. Preventive healthcare services use among transgender young adults. Int J Transgend. 2018;19:417–423.
16. Kasting ML, Giuliano AR, Christy SM, et al. Human papillomavirus vaccination prevalence among adults aged 19–45 years: an analysis of the 2017 National Health Interview Survey. Am J Prev Med. 2020;59:837–849.
17. Department of Health and Human Services. Increase the proportion of adolescents who get recommended doses of the HPV vaccine—IID-08. Healthy People 2030. Available at: https://health.gov/healthypeople/objectives-and-data/browse-objectives/vaccination/increase-proportion-adolescents-who-get-recommended-doses-hpv-vaccine-iid-08 Accessed November 22, 2021.
18. Stroumsa D, Shires DA, Richardson CR, et al. Transphobia rather than education predicts provider knowledge of transgender health care. Med Educ. 2019;53:398–407.
19. Advisory Committee on Immunization Practices. Recommendations on the use of quadrivalent human papillomavirus vaccine in males, 2011. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a3.htm Accessed April 19, 2021.
20. Boersma P, Black LI. Human papillomavirus vaccination among adults aged 18–26, 2013-2018. NCHS Data Brief. 2020;1–8.

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Abbreviations Used

AFAB = assigned female at birth
AMAB = assigned male at birth
CIs = confidence intervals
HPV = human papillomavirus
ORs = odds ratios
REIDS = Research Education Institute for Diverse Scholars
TNB = transgender and nonbinary